

Joseph Bak-Coleman

PERSONAL DETAILS

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PROFESSIONAL APPOINTMENTS

Associate Research Scientist July 2022 - Present
Columbia University
Craig Newmark Center for Journalism Ethics and Security

RSM Assembly Fellow Sept. 2022 - Present
Harvard University
Berkman Klein Center

Affiliate Aug. 2022 - Present
UNC Chapel Hill
Center for Information, Technology, and Public Life

Postdoctoral Scholar Sep 2020 - July 2022
University of Washington
Center for an Informed Public

UW Data Science Postdoctoral Fellow Sep 2020 - July 2022
University of Washington
eScience Institute

EDUCATION

Ph.D. Ecology and Evolutionary Biology 2014-2020
Princeton University
Supervisors: Professor Iain Couzin, Professor Dan Rubenstein
Dissertation Title: Collective behavior in a connected world

M.A. Ecology and Evolutionary Biology 2016
Princeton University
Supervisors: Professor Iain Couzin, Professor Dan Rubenstein

M.S. Biology 2014
Bowling Green State University
Supervisor: Professor Sheryl Coombs
Thesis Title: The role of the lateral line during rheotaxis

B.S. Neuroscience 2011
Bowling Green State University

PEER-REVIEWED PUBLICATIONS

[16] J. Bak-Coleman et al. "Collective wisdom in polarized groups." In: *Collective Intelligence* (2022).

- [15] J. Bak-Coleman et al. “Combining interventions to reduce the spread of viral misinformation”. In: *Nature Human Behavior* (2022).
- [14] J. Jolles et al. “Both prey and predator features predict the individual predation risk and survival of schooling preyx”. In: *eLife* (2022).
- [13] C. Winkylmayr et al. “Collective decision strategies in the presence of spatial and temporal correlations”. In: *Collective Intelligence* (2022).
- [12] J. Bak-Coleman et al. “Stewardship of Global Collective Behavior”. In: *PNAS* (2021).
- [11] S. Coombs, J. Bak-Coleman, and J. Montgomery. “Rheotaxis revisited: Multi-behavioral and multisensory frameworks for understanding how fish orient to flow.” In: *The Journal of Experimental Biology* (2020).
- [10] L. Liang et al. “Energy savings in freely swimming fish”. In: *Nature Communications* (2020).
- [9] C. Winkylmayr, A. Kao, and J. Bak-Coleman. “The wisdom of stalemates: consensus and clustering as filtering mechanisms for improving collective accuracy”. In: *Proceedings B* (2020).
- [8] M. Sosna et al. “Structural encoding of perceived risk in fish schools”. In: *PNAS* (2019).
- [7] A. Kao et al. “Counteracting estimation bias and social influence to improve the wisdom of crowds.” In: *Journal of the Royal Society, Interface* 15 (2018).
- [6] J. Bak-Coleman, D. Smith, and S. Coombs. “Going with, then against the flow: Evidence against the optomotor hypothesis of fish rheotaxis”. In: *Animal Behaviour* 107 (2015).
- [5] A. Chicoli et al. “Rheotaxis performance increases with group size in a coupled phase model with sensory noise: The effects of noise and group size on rheotaxis”. In: *European Physical Journal: Special Topics* 224 (2015).
- [4] M. Kulpa, J. Bak-Coleman, and S. Coombs. “The lateral line is necessary for blind cavefish rheotaxis in non-uniform flow”. In: *The Journal of Experimental Biology* 218 (2015).
- [3] J. Bak-Coleman and S. Coombs. “Sedentary behavior as a factor in determining lateral line contributions to rheotaxis”. In: *The Journal of Experimental Biology* 217 (2014).
- [2] A Chicoli et al. “The effects of flow on schooling *Devario aequipinnatus*: school structure, startle response and information transmission”. In: *Journal of Fish Biology* (2014).
- [1] J. Bak-Coleman et al. “The spatiotemporal dynamics of rheotactic behavior depends on flow speed and available sensory information.” In: *The Journal of Experimental Biology* 216 (2013).

MANUSCRIPTS

- [2] J. Bak-Coleman et al. “Replication does not reliably measure scientific productivity”. In: (Review).
- [1] K. Tombak et al. “Zebra groups aggregate in response to Petrucci’s passive forces, disaggregate in response to Darwn’s hostile forces.” In: (prep).

AWARDS AND FUNDING

| | |
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| Berkman Klein Center RSM Fellowship | \$18K |
| CIP Innovation Fund Rapid Response Workshop | \$2.5K |
| CIP Innovation Fund Experimental approaches to studying misinformation online | \$10K |
| CIP Postdoctoral Fellowship | ≈\$150K |
| UW eScience Institute Data Science Postdoctoral fellowship | \$2K |
| BGSU CURS Summer Research Fellowship | \$2.5K |
| BGSU SETGO Summer Research Fellowship | \$3.5K |
| Choose Ohio First Bioinformatics Scholarship (3. years) | \$12K |
| Flow Sensing in Air and Water Travel Award | \$2K |

OTHER WRITING

Twitter Is Not Rocket Science—It's Harder, *Scientific American*
On Elon Musk's Vision of Twitter as a Hive Mind, *Tech Policy Press*
Promoting sustainability and equity in global social systems , *UNDP Report*, 2021
A High-Speed Scientific Hive Mind Emerged, *Scientific American*, 2021
Meta's 'average user' data obscures harm to thousands... *The Conversation*, 2021
Journalists are exposing Facebook's problems. We'll need academics... *Tech Policy Press*, 2021
How to Mislead with Statistics, *Significance*
The Long Fuse: Misinformation and the 2020 Election *Election Integrity Partnership*, 2021
Information gerrymandering in social networks skews collective decision-making. *Nature*, 2019
The ignorance of the crowd. *Scientific American*, Nov. 2017
Why did Donald Trump get elected? Ask the bees. *Wired*, Dec. 2016

SEMINARS AND CONFERENCE PARTICIPATION

| | |
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| Vlasceanu Lab Meeting, (NYU) | *2022 |
| Collective Intelligence Journal Launch (Sage Journals) | *2022 |
| Keynote Speaker, Rebooting Social Media Kickoff (Berkman Klein Center, Harvard) | *2021 |
| Machine Learning Ethics, Transparency and Accountability Seminar Speaker (Twitter) | *2021 |
| Plenary, DARPA ISAT SLICE Workshop (Stanford Internet Observatory) | *2021 |
| Whole U Seminar Series (University of Washington) | *2021 |
| Online Behavioral Interventions Workshop (Max Planck Institute for Human Development) | *2021 |
| Collective Intelligence Workshop (Santa Fe Institute) | *2021 |
| Humphrey Fellowship Seminar (University of Washington) | *2021 |
| IC2S2 Satellite Panel (Konstanz) | *2021 |
| iSchool Seminar Series (University of Washington) | *2021 |
| IC2S2 (Amsterdam) | 2019 |
| Invited Lecture (Lenoir-Rhyne University) | *2019 |
| Van Bavel Lab Meeting (New York University) | *2019 |
| Collective Behavior, Social Media and Systemic Risk (Princeton University) | *2018 |
| Yale Institute for Network Science (Yale University) | *2018 |
| Distributed, Collective Computation in Biological and Artificial Systems (Janelia Farm) | 2018 |
| Integrated Behavioral Research Group (Princeton University) | 2018 |
| Metropolitan Society of Natural Historians (AMNH) | *2016 |
| Integrated Behavioral Research Group (Princeton University) | 2016 |
| Animal Behavior Society (Bloomington, IN) | 2012 |
| International Congress of Neuroethology (College Park, MD) | 2012 |
| Ecological and Evolutionary Ecology of Fishes (Windsor, ON) | 2012 |
| J.P. Scott Seminar (BGSU) | 2011 |
| Flow Sensing in Air and Water (Bonn, Germany) | *2011 |
| Undergraduate Honors Society Seminar (BGSU) | *2011 |
| SETGO Symposium (BGSU) | 2011 |
| J.P. Scott Seminar (BGSU) | 2010 |

* Invited

SELECTED COVERAGE AND IMPACT

The only thing Elon Musk understands about Twitter is how to kill it *Insider*
2021-22 Human Development Report. *United Nations Development Program*
Big Tech must step up now to fight misinformation in the midterms. *The Hill*
Journals must adapt to better serve misinformation research. *Nature*
Detecting Bullshit. *Science*
As Climate Change Fries the World, Social Media Is Frying Our Brains. *Bloomberg*

It's Time to Treat Social Media Like the Climate Crisis, Researchers Argue. *Gizmodo*
Why some biologists and ecologists think social media is a risk to humanity. *Vox*
The coronavirus pandemic drove life online. It may never return., *NBC News*
Social-Media Companies Took an Aggressive Stance During the Election. Will It Continue?, *WSJ*
Misinformation by a thousand cuts: Varied rigged election claims circulate, *NBC News*
Project Veritas Video Was a 'Coordinated Disinformation Campaign,' Researchers Say. *NYT*

TEACHING

| | |
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| Guest Lecturer <i>Calling Bullshit</i> 2020 | University of Washington |
| Guest Lecturer <i>Comparative Physiology</i> 2017-2018 | Princeton University |
| Assistant in Instruction <i>Comparative Physiology</i> <i>Conservation Biology</i> <i>Life on Earth: Chaos and Clockwork of Biological Design</i> 2014-2018 | Princeton University |
| Adjunct Instructor <i>Introductory Biology, Taxonomy</i> 2014 | Owens Community College |

SERVICE

Member, Coalition for Independent Tech Research, 2022-
Annual Report Consultant, **United Nations Development Programme**, 2022
Lab meeting and Seminar Series Organizer, **Center for an Informed Public**, 2020-2022
Hidden Curriculum Happy Hour Organizer, **Center for an Informed Public**, 2021-2022
Misinfo rapid-response workshop organizer, **Center for an Informed Public**, 2021-2022
Election Integrity Partnership Analyst Team Lead, **Election Integrity Partnership**, 2020
EEB Scholars Host and Speaker, **Princeton**, 2018-2019
DEI Recruiting, **ABRCMS**, 2018
CBSMSR Conference Organizer, **Princeton**, 2017
Graduate Representative, **Princeton**, 2016-2018
DEI Recruiting, **ABRCMS**, 2017
Prospective Student Week Organizer, **Princeton**, 2014-2019
Behavior Seminar Series Organizer, **Princeton**, 2015-2016
Graduate Retreat Organizer, **Princeton**, 2016-2017
President of Biology Graduate Student Association, **BGSU**, 2011-2013

PEER REVIEW

Animal Behavior
Biology Open
Entropy
Journal of Experimental Biology
Nature Communications
Physics Review Letters
Patterns
PLOS Computational Biology
PNAS

